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Quality Management in the Military: An Overview and a Case Study

by Elizabeth Duffek and Warren Harding

■ **In the early 1980s, the Department of Defense began a quality improvement initiative based principally on W. Edwards Deming's philosophy of continuous improvement. Quality management has since been implemented agency-wide. Global economic and political forces are causing enormous changes in the U.S. military and effecting the success of individual programs. This article illustrates, via a case study, how top DoD level decisions have affected one defense research laboratory and driven changes at the lowest field level.**

Over the past few years, national economic concerns and worldwide political upheaval have compelled the Department of Defense (DoD) to reshape its agency. Downsizing and budget trimming of the U.S. military began on a small scale in the late 1980s, echoing events in private industry. As the DoD found itself coping with monumental changes, Dr. W. Edwards Deming's principles of continuous improvement and other ideas on quality management were gaining national interest. These ideas attracted the attention of top DoD personnel, and became the basis for an agency-wide quality management initiative.

The Department of Defense first considered pursuing quality management about twelve years ago, well before anyone could predict the significant reductions in personnel and funding affecting the armed forces today. The principal mechanism for establishing quality management in the DoD has been Total Quality Management, or TQM, officially sanctioned by the agency in 1988. The Defense Department's approach emphasizes the Deming philosophy of continuous improvement, and borrows selectively from the principles of Juran, Crosby, Feigenbaum, Shewhart, and others in outlining the systematic adoption of quality management practices. Since its inception, evidence of this new way to do business is evident in varying degrees from top management to the lowest field level operation.

History of Quality Management in the DoD

The quality improvement initiative in the military began in the early 1980s with the Navy Personnel Research and Development Center (NPRDC) in San Diego, CA, when it chose Deming's philosophy of continuous improvement for training its acquisition workforce.[1] In 1987, Dr. Robert Costello, former Under Secretary of Defense for Acquisition, issued a memo outlining how TQM could be implemented within the DoD. In March of the following year, then Secretary of Defense Frank Carlucci released the DoD Posture on Quality, followed in October by a master plan for implementing TQM across the entire agency.[2] Within the guidelines of the master plan, individual organizations were given considerable leeway to implement quality management pro-

grams in a manner most appropriate to their particular function and needs.[3]

Quality Management Programs in the DoD

Manufacturing and repair operation were the first to successfully launch quality improvement in the Department of Defense. Using Deming's philosophy and techniques of statistical process control, naval shipyards, aircraft overhaul centers, and Army supply depots reduced turnaround time on repair and deliveries, increased customer satisfaction, improved reliability of work performed, and reduced overall costs.[4] In 1985, the Air Force announced its R & M 2000 program for increasing the reliability of newly acquired weapons systems and the ability to maintain them.[5] Although the DoD Master Plan for TQM implementation initially focused on acquisitions activities, it also clearly stated that the DoD would eventually adopt and practice continuous improvement throughout its entire operation.

Organizational Structure and its Effect on TQM Implementation

By its very nature, the Department of Defense is a highly structured and autocratic institution. The hierarchical rank system on which it must depend to function properly is both an inherent and important element of the workplace culture; at the same time, this characteristic presents an obstacle to lateral and bottom up communication within the organization. Free flow of ideas in all directions is essential to the success of any quality management effort, and DoD organizations have a number of sources they can turn to for help in developing a strategy for quality improvement implementation. The AF Quality Center at Maxwell AFB, AL, the Federal Quality Institute, and private sector trainers, all experienced with implementing quality management within complex, highly structured organizations, assist the DoD and other federal agencies in their move toward quality improvement.

The structure of DoD installations makes the concept of the internal customer an extremely important one. Many defense facilities—whether a combat-ready Army post or an Air Force research center—employ military and civilian staff internally to provide supporting services for those employees who perform the organization's primary mission work. Payroll offices, contracting offices, libraries, computer centers, and recreational facilities all exist to handle the daily operations needs of those carrying on the Defense Department's activities. The makeup of such a facility can be quite cumbersome and divided, presenting considerable challenges to creating a culture of continuous improvement.

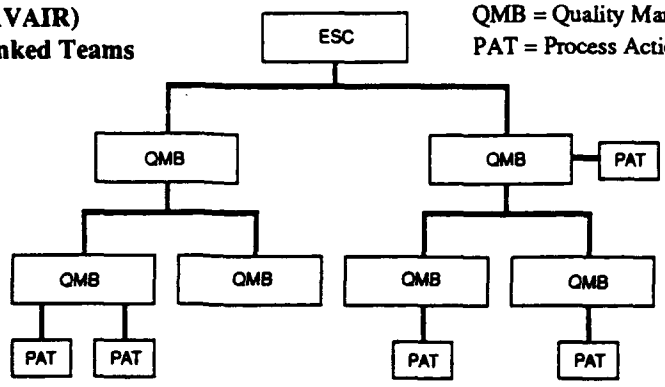
Although there is no one best way to introduce a quality management program in such agencies, the Federal Quality Institute suggests various models for large, bureaucratic organizations to follow. One of the more successful methods has been to superimpose the program's structure over that which already exists in the organization, making adjustments necessary for lateral communication across the organization. As an example, the chart on the following page illustrates how the Naval Air Systems Command set up its quality management program structure.

In this model, the Executive Steering Committee (ESC) gives policy guidance for the overall improvement effort; the Quality Management Boards organize process action teams (PATs), guide the team efforts, implement changes when possible and recommend other changes to the ESC; PAT members work on a specific problem, document a process, collect and analyze data, and make recommendations for change. PATs with cross-functional memberships bring the skills and concerns of both support and mission personnel to the improvement process, and open up communications in ways that may not have previously existed.

Quality Management at the DoD Laboratories

In the military research arena, DoD decisions in 1989 and 1990 consolidated Army, Navy, and Air Force research laboratories

TQM Organizational Structure at Naval Air Systems Command (NAVAIR) Multi-Level Linked Teams



within each branch of military service; in the Air Force, this decision reduced the number of laboratories from 12 to four. As a result, many fledgling TQM efforts suffered setbacks or ceased entirely. The instability and uncertainty surrounding such a radical change created an atmosphere detrimental to practicing continuous improvement in many places. Additionally, the stable environment needed to analyze processes, collect data, and implement changes in a controlled manner disappeared. Furthermore, the effects of Congressionally mandated budget cuts and personnel reductions began impacting the workforce at the field level. This triple dose of negative factors derailed a number of quality management efforts. However, even as personnel drawdowns and funding cuts continue, some organizations are resurrecting their efforts as a way of addressing the mandate for a more streamlined and effective military.

Implementing Change in a DoD Laboratory: A Case Study

In December 1990, as part of the Air Force reorganization of its research laboratories, the Phillips Laboratory replaced the Air Force Space Technology Center, which consisted of a headquarters at Kirtland AFB, NM; the Weapons Laboratory, also at Kirtland AFB; the Geophysics Laboratory at Hanscom AFB, MA; and the Astronautics Laboratory at Edwards AFB, CA. With such a drastic change in organizational structure, the new laboratory would obviously need a different method for reporting and tracking funding of its activities.

Six months prior to DoD laboratory consolidation, the Geophysics Laboratory commander appointed a Process Action Team (PAT) to apply quality improvement techniques to the financial management area of the laboratory operation. When reorganization occurred, TQM progress at Phillips Laboratory/Hanscom ceased both because of that decision, and also to avoid instituting new procedures which might become rapidly obsolete within the new organization.

It took close to a year for the new Phillips Laboratory to define policies and directives for financial management activities. The new guidelines marked a significant shift in the way support services at the three PL locations would fund much of their work. Traditionally, suport services (the purchasing department, library, printing department, etc.) were performed at no cost to the customer, i.e. the scientific divisions. The new management directive required that laboratory support functions now charge the cost of these services back to the divisions requesting them.

To address how to best adapt to this new policy at the PL/Hanscom location, the Geophysics Directorate called on the TQM Financial Management PAT for ideas. The team had been wrestling with two issues for some time:

1) how to reduce the inordinate number of existing funding accounts, and 2) how to create a mechanism for cross-charging costs for services. When the new PL management announced its policy, the team was prepared with the right idea at the right time. The PAT recommended combining a maze of existing funding categories into one element of expense (EEIC) and the use of that one "pot" of funding to provide support services to all the scientists on a reimbursable basis. Although the idea may appear simple, it was a radical one for the Geophysics Directorate. This solution would treat all customers equally, in effect establishing a contractual situation between the scientific and support functions of the laboratory. The arrangement completely changed the relationship between these activities, emphasizing the customer/provider relationship much more clearly.

Rethinking the Research Library Operation

The PL Research Library, part of the PL operation at Hanscom AFB, serves to illustrate how a change at the executive level proved the catalyst for functions within the organization to reshape the way they do business. Prior to the institution of the single EEIC concept, the Research Library received yearly funding to cover everything from journal renewals to online search costs. With the new policy in place, the Research Library now needed to identify the portion of its costs that could be directly attributed to customer requests. Those costs would then be charged back to the individuals requesting them. Simply put, all library services that could be readily identified to a customer would be reimbursed, and the remaining operating costs would be funded by the library's budget. Concurrently, the funds allocated for the Library's operating budget would decrease, and the Library would be expected to make up the difference via the income from customers.

The policy of reimbursement leaves the Research Library looking to its customers for a portion of its funding. At the same time, the scientific divisions will be looking at how to use their own diminishing funds most effectively; they may decide to forego requesting Dialog searches, document delivery, and other library services now that their own funds will cover the cost. The specter of losing customers and business confronts the Research Library, and for the first time in the Library's history, forces it to compete for customer dollars. This new focus on customer relations was initially threatening the library staff, but time has helped reveal the silver lining. To a great extent, how vital the library remains to the PL Laboratory is now up to the library itself. The new policy will mean more aggressive marketing of library services and their value to the scientist, improving online search skills to keep the costs of online searching as low as possible, and surveying customers for the first time in years to see how current library service is perceived and if new services can be offered.

Conclusion

As the PL Research Library discovered, no part of an organization is so insular or small that it will escape the effects of change. As seen here, this axiom holds true for an organization of any size. In a way, it may be even more difficult to experience in a large bureaucratic one because by the time the effects of change trickle to the bottom, those at the field level are powerless to do anything but accept what comes. Stepping beyond the anxiety and fear such change creates may seem impossible to do at times, but only by doing so can an organization use change as a tool for improving its operation.

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